

Chicago Perforator Solves Design Challenges with Ingenuity and Expertise

With the amount of turret punches that fabricators have nowadays, just about anybody can knock holes into steel. But Chicago-based Accurate Perforating goes far beyond perforation, offering OEMs and architectural clients custom work on complicated jobs while ensuring corrective leveling to battle any distortion in the metal.

"The problem is the process of perforating metal distorts the steel significantly," said Accurate Perforating Marketing Manager Gary Huppert. "Making the holes in the metal is the easy part; making it a flat, usable piece again is a bit more of an art." That artistic capability is in part delivered by a series of specialized machines that can either stretch, re-form, or flatten the part to turn it back into a flat panel. But it also is attributed to an understanding of the metal and how to relieve its stresses.

Punching holes in metal stretches the metal and, as a result, the piece will tend to torque and twist. "That stress has to go somewhere," Huppert said. "And so it's our ability to then counteract those stresses and turn it back into a flat panel that gives us an advantage over others. Just about anyone can punch holes, but not everyone has the equipment and the understanding of the material to turn it back into a flat, usable piece."

Corrective leveling has become an art form to Accurate Perforating (www.accurateperforating.com), and Huppert said much of the technique has to do with the center camber of the metal piece, which will arc in one direction. "There are techniques for stretching the outer edge to relieve that stress. It depends on if the stress runs lateral or horizontal across the part," he said.

While Huppert stresses that corrective leveling is an art that his company has perfected, its single greatest strength is its ability to provide custom perforations in a wide variety of metals, including steel, stainless steel, aluminum, brass, and copper. These materials are used across numerous industries, including oil and gas, food processing, sound abatement, mining, and automotive. The company also serves many OEMs and metal fabrication markets with pre-fabrication blanks, as well as partially-fabricated and fully-fabricated, finished components. Accurate Perforating has made a strong entry into the architectural market, offering a huge selection of standard perforation patterns and the ability to create tooling for virtually any custom pattern.

The company's most recent expansion is into custom sun shades and sun screens that include both vertical and horizontal components.

"Think of them like a perforated metal awning. Perforated metal is a perfect application for that, as opposed to a fabric awning," Huppert said, adding that metal stands up to wind and rain better than

any fabric or plastic. Aluminum is lightweight and easy to install, while copper and brass enable various decorative elements. The company also offers finishings and architectural coatings, including some high-tech vinyl coatings that are exceptionally weather resistant. "So because of our custom approach to everything, an architect or design engineer looks at something and says, 'I really would like to do this,' and we say, 'Okay, we'd really like to help bring their vision to reality.'"

One project that solved an engineering challenge was for a medical building in California, where the architect's design called for sun shades to match the radius of the building, which featured several glass atrium areas that extended out from the building. Huppert said the architect further complicated the project by requiring that the perforation pattern match the radius of the sun shade panel to maintain visual continuity. "So we had to work out the radius and size and spacing to give the required aesthetic look. Because of the way we were able to do the custom perforation, we were able to match the radius of the perforating pattern to the radius of the metal," he said. Accurate Perforating was able to develop a custom tool and apply several techniques to create the radius perforation pattern.

"The key challenges included developing the perforation pattern to meet the open area requirements," Huppert said in a statement. "Second was to match the perforation to the radius of the panel and, finally, to achieve all of the building codes while also achieving the aesthetic requirements. In the end, we achieved all of the goals and provided exactly the product the architect had envisioned."

The sun shades and sun screens inherently offer energy efficiency for the buildings they go on, protecting the interior from direct sunlight in hot areas of the country and protecting the buildings from cooling rains in colder places of the country. Accurate Perforating stresses its green initiatives that it offers its customers, especially its architectural clients that are looking into creating LEED certified buildings. The metal the company uses has about 70 percent recycled content, with 60 percent coming from post-consumer sources. The company also offers a low VOC, high durability finish and a lower carbon footprint through material reduction and regionally-sourced materials.

Accurate Perforating, Huppert said, is constantly developing new tooling to provide additional capabilities, and recently added another turret punch press, a robotic welding system, and a new precision spot welder. The vast selection of custom tooling allows Accurate Perforating to create a practically limitless variety of perforating patterns. The custom technology allows Accurate to create end or edge margins, or blank unperforated areas on the edges of the metal.

"Our expertise in corrective leveling is critical," Huppert said in a statement. "This is a complicated and critical aspect of any perforating process. Each time a punch of metal is removed from a sheet, it causes a distortion in the metal. The more holes, the greater the distortion. Typical distortion includes rolling, twist, or camber, which is a lateral distortion of the metal. Knowing how to correct this distortion—returning the part to a flat and usable state—is critical, and it is something we do exceptionally well."